CLAIMS

1. A method of protecting a fuel cell (12), consisting of individual cell elements, delivering electric power in response to a power demand, a booster circuit (30) being suitable for delivering additional electric power in order to assist the fuel cell, characterized in that said method comprises the following steps:

- a parameter representative of the minimum voltage is determined from among the voltages across the terminals of each individual cell element; and
- the additional electric power delivered by the booster circuit is controlled so that said minimum voltage remains above a specified threshold.

2. The method as claimed in claim 1, in which the booster circuit (30) maintains the voltage across the terminals (16, 17) of the fuel cell (12) on the basis of a setpoint (S_o) determined from said parameter.

3. The method as claimed in claim 1, in which the individual cell elements of the fuel cell (12) are supplied with oxygen by a stream of feed air, the fuel cell discharging a stream of exhaust air, said parameter being the image of the oxygen content (xO_2) of the stream of exhaust air, and the booster circuit (30) delivering additional electric power so that the oxygen content is above a specified threshold.

4. The method as claimed in claim 1, in which said parameter is the image of the derivative of the voltage across the terminals (16, 17) of the fuel cell (12), the booster circuit (30) delivering additional electric power in order for the derivative of the voltage across the terminals of the fuel cell to be above a specified threshold.

5. The method as claimed in claim 1, in which the operation of controlling the additional electric power delivered by the booster circuit (30) consists, in the following steps #5:

- in determining an image current (Im_p) that is the image of the current (I_p) delivered by the fuel cell (12);
- in filtering the image current by a low-pass filter;
- in delivering a comparison signal equal to the sum of a constant (I_0) and of the filtered image current multiplied by a correction coefficient (β); and
- in controlling the additional electric power delivered by the booster circuit (30) so that the image current of the current delivered by the fuel cell converges on the comparison signal.

6. A booster device (30) for a fuel cell (12), consisting of a set of individual cell elements and suitable for delivering electric power in response to a power demand, said device being suitable for delivering additional electric power in order to assist the fuel cell, characterized in that it comprises:

- a circuit for determining a parameter representative of the minimum voltage from among the voltages across the terminals of each individual cell element; and
- a circuit for controlling the additional electric power delivered so that said minimum voltage remains strictly positive.

7. The device as claimed in claim 6, which further includes:

- a voltage source (20);
- a circuit for delivering a setpoint (S_o); and
- a chopper circuit connected to the voltage source, which receives said setpoint and fixes the

voltage across the terminals (16, 17) of the fuel cell on the basis of said setpoint.

8. The device as claimed in claim 7, in which the circuit for delivering the setpoint (S_o) comprises:

- a circuit for determining an image current (Im_p) that is the image of the current (I_p) delivered by the fuel cell (12);
- a circuit for determining a comparison signal equal to the sum of a constant (I_0) and of the image current multiplied by a correction coefficient (β);
- a comparison circuit that delivers an error signal (ε) corresponding to the difference between the image current and the comparison signal; and
- a regulator that delivers the setpoint in order to minimize the error signal.

9. The device as claimed in claim 8, in which the regulator is of the integral or proportional-integral type.